AIRS activities at NCEP

John C. Derber

NOAA/NWS/NCEP/EMC

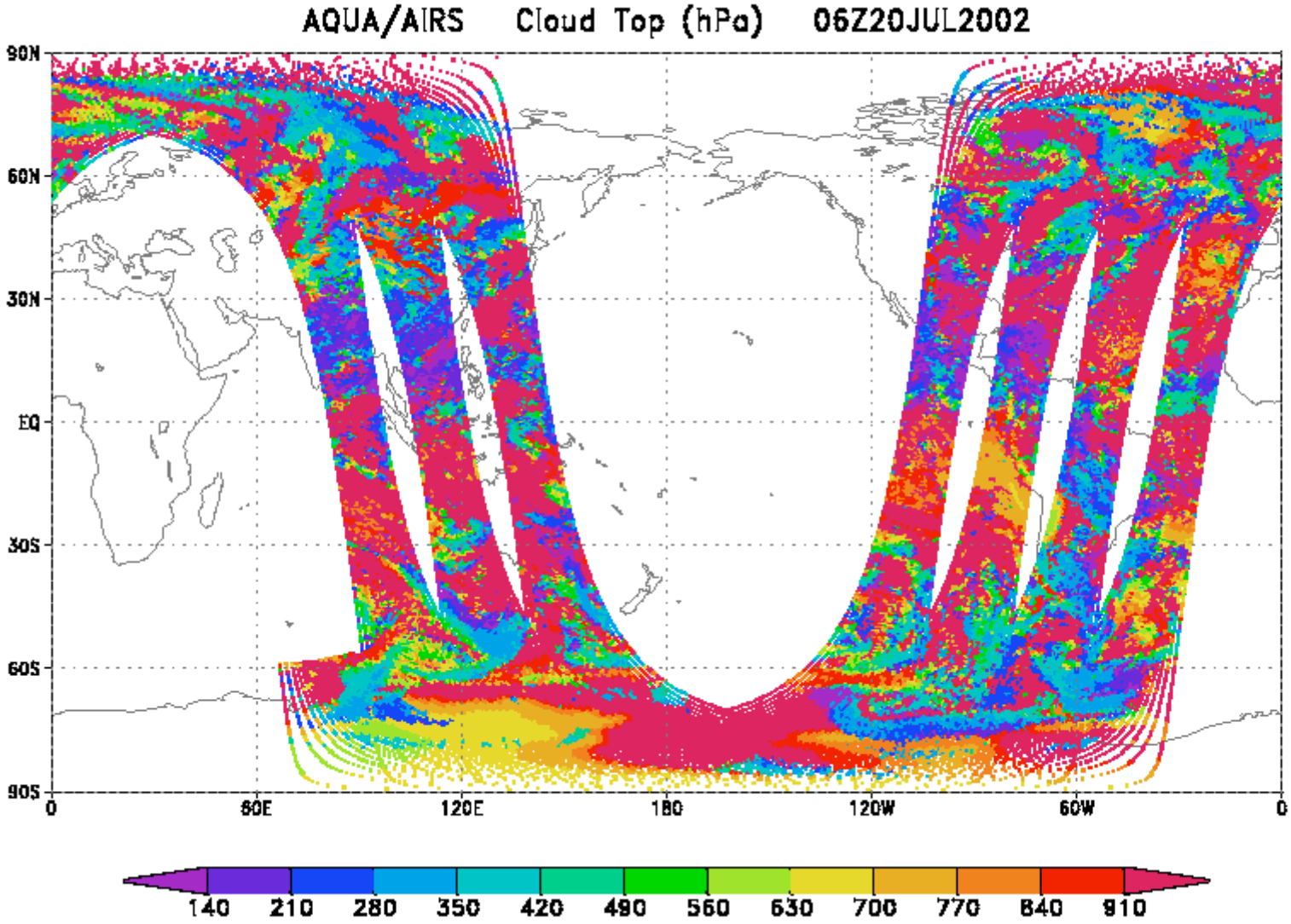
(VanDelst, Tahara, Treadon, et al.)

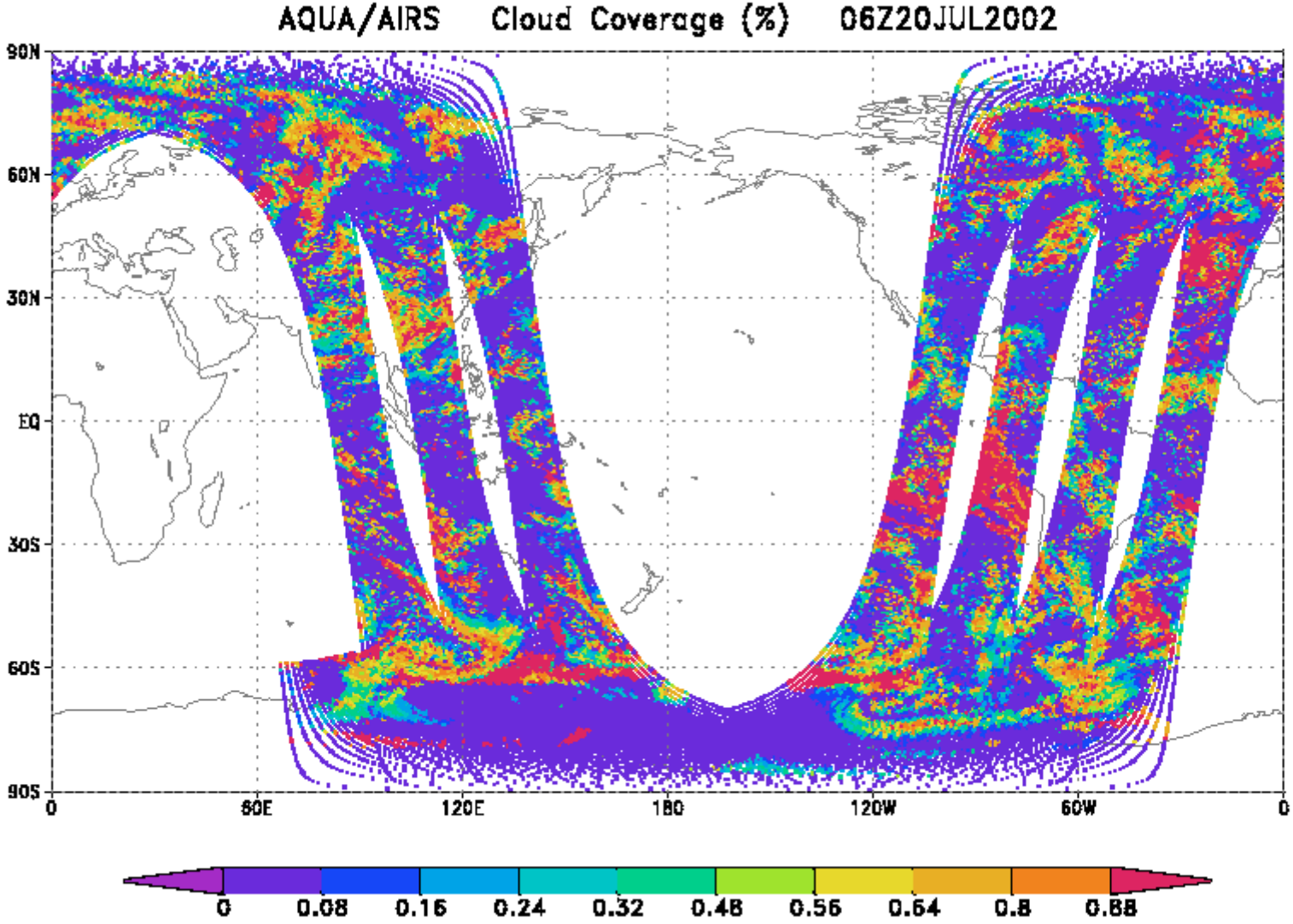
Status

- Data feed available on bsp (old system) and frost (new system)
- New RT parallel testing on bsp
- AIRS monitoring underway on bsp
- Transfer of New RT to frost for parallel testing – also including:
  - Improved time interpolation
  - Bias correction
  - Improved minimization schemes
  - Other minor enhancements

AIRS

- Major difference – large number of channels (we are using 281)
- New QC based on estimated cloud height/ % cloud
- Cloud height/ % cloud reasonable

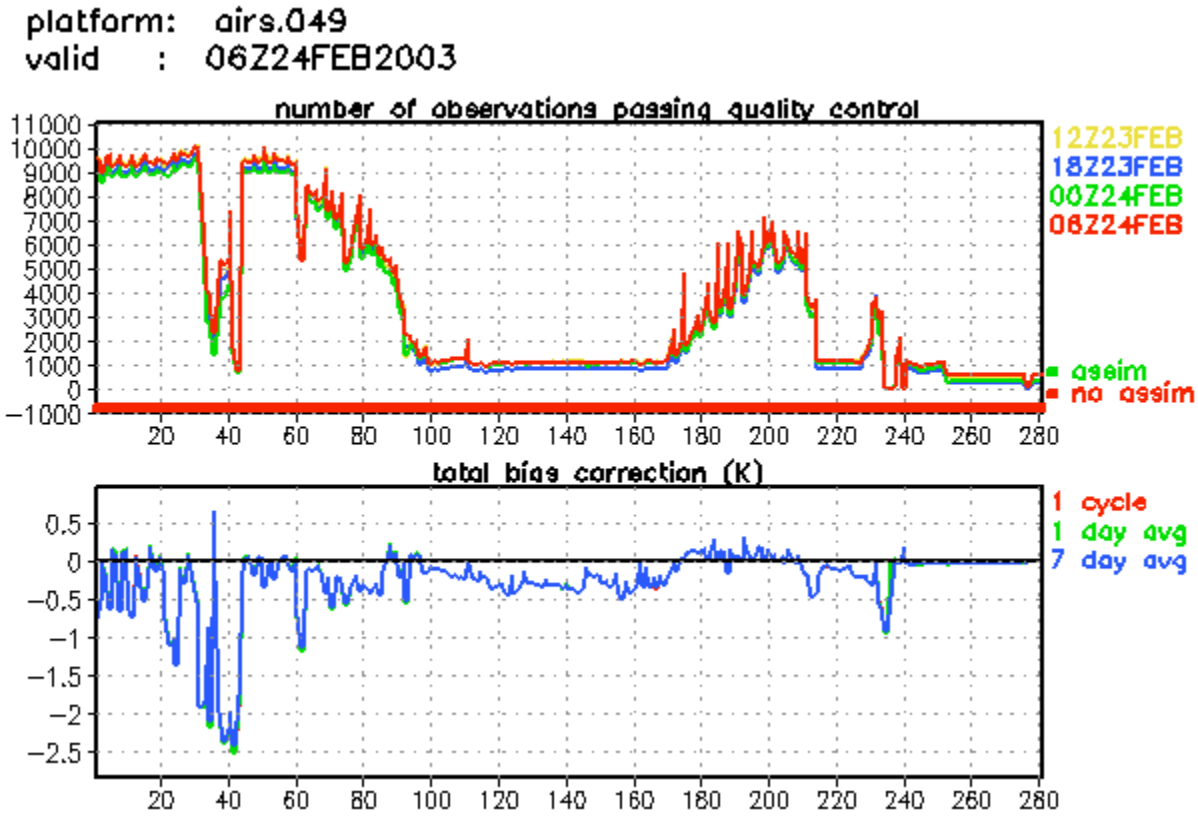

AQUA/AIRS Cloud Top (hPa) 06Z20JUL2002
90N
60N
30N
EQ
30S
60S
90S
0
60E
120E
180
120W
60W
0
140
210
280
350
420
490
560
630
700
770
840
910


AQUA/AIRS Cloud Coverage (%) 06Z20JUL2002
90N
60N
30N
EQ
30S
60S
90S
0
60E
120E
180
120W
60W
0
0
0.08
0.16
0.24
0.32
0.48
0.56
0.64
0.8
0.88

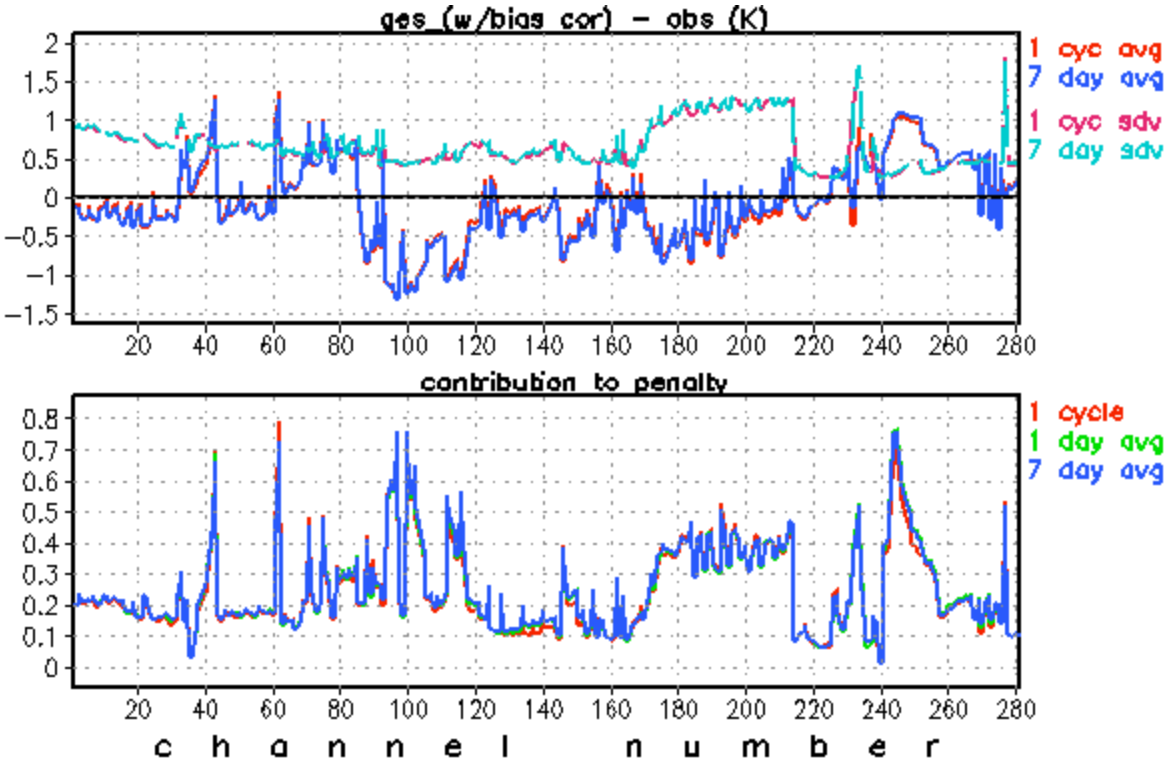
NCEP monitoring site

- http://wwwt.emc.ncep.noaa.gov/gmb/gdas/radiance/prp/index.html

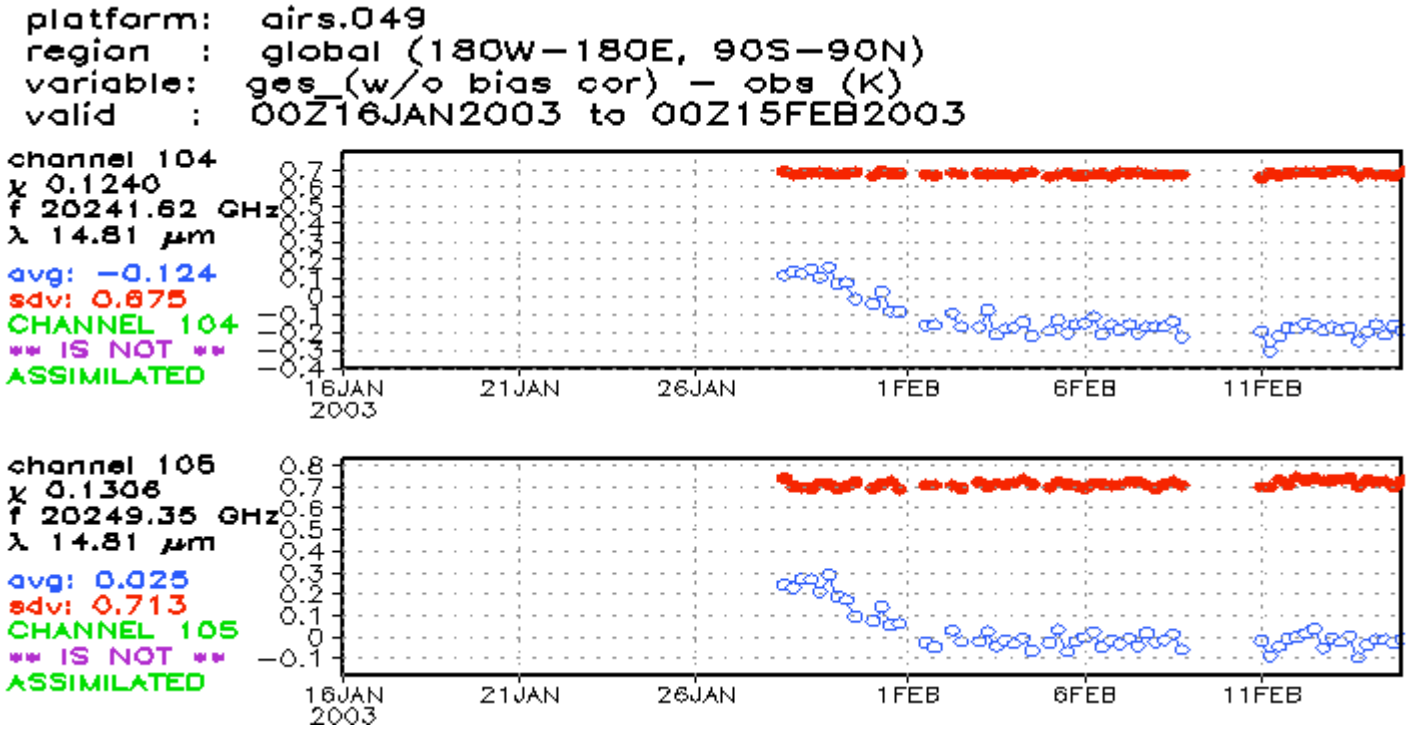
Thumbnail


platform: airs.049
valid : 06Z24FEB2003
number of observations passing quality control
12Z23FEB
18Z23FEB
00Z24FEB
06Z24FEB
assim
no assim
total bias correction (K)
1 cycle
1 day avg
7 day avg

Thumbnail


ges_(w/bias cor) - obs (K)
1 cyc avg
7 day avg
1 cyc sdv
7 day sdv
contribution to penalty
1 cycle
1 day avg
7 day avg
channel number

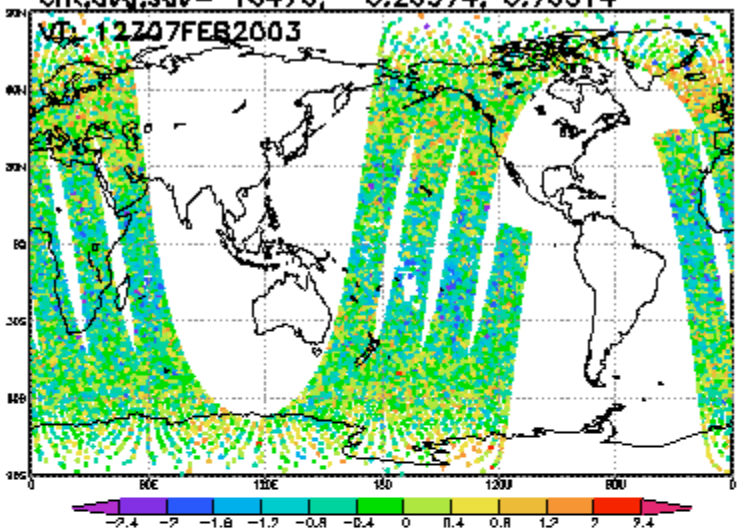
Individual plots for channels (time and angle)



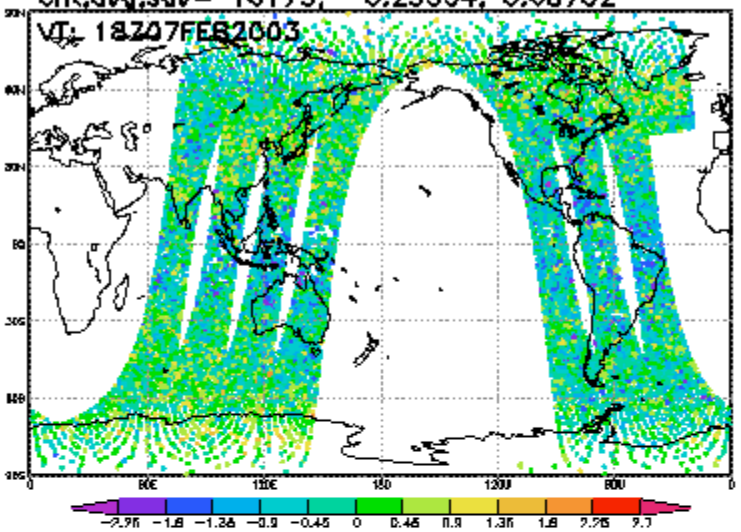
platform: airs 49 (NOT ASSIMILATED)
variable: channel 68 ges_(w/bias cor) - obs (K)

frequency: 19966.45 GHz
wavelength: 15.01 μm

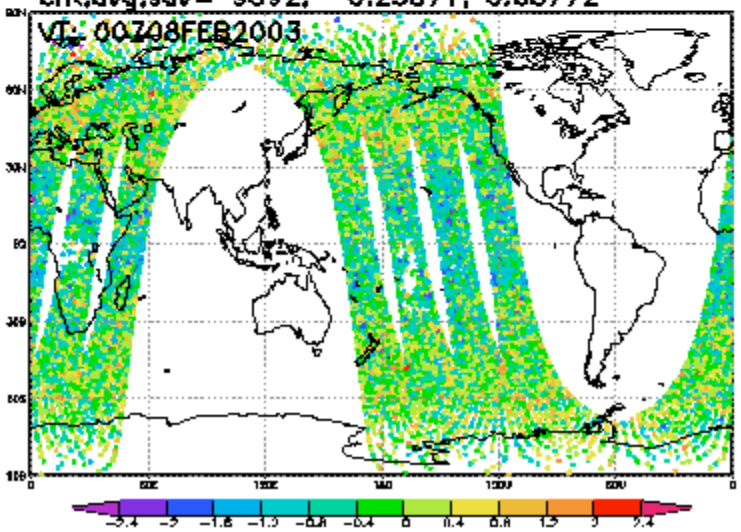
cnt,avg,sdv= 10470, -0.26974, 0.70514



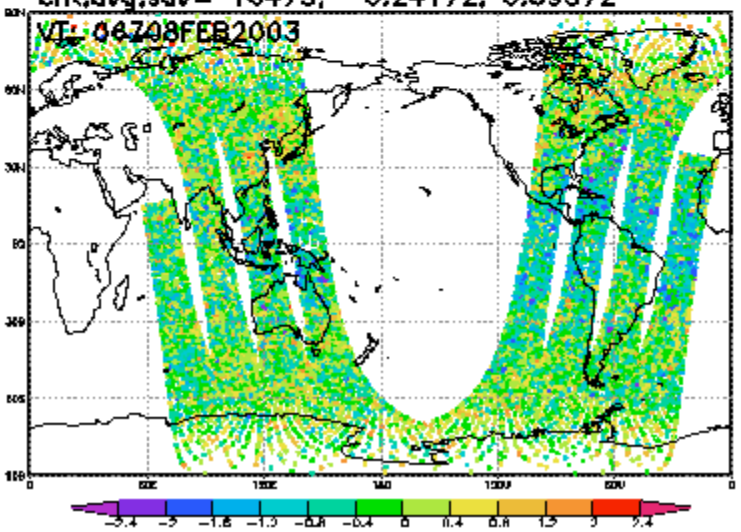
cnt,avg,sdv= 10173, -0.23554, 0.68702



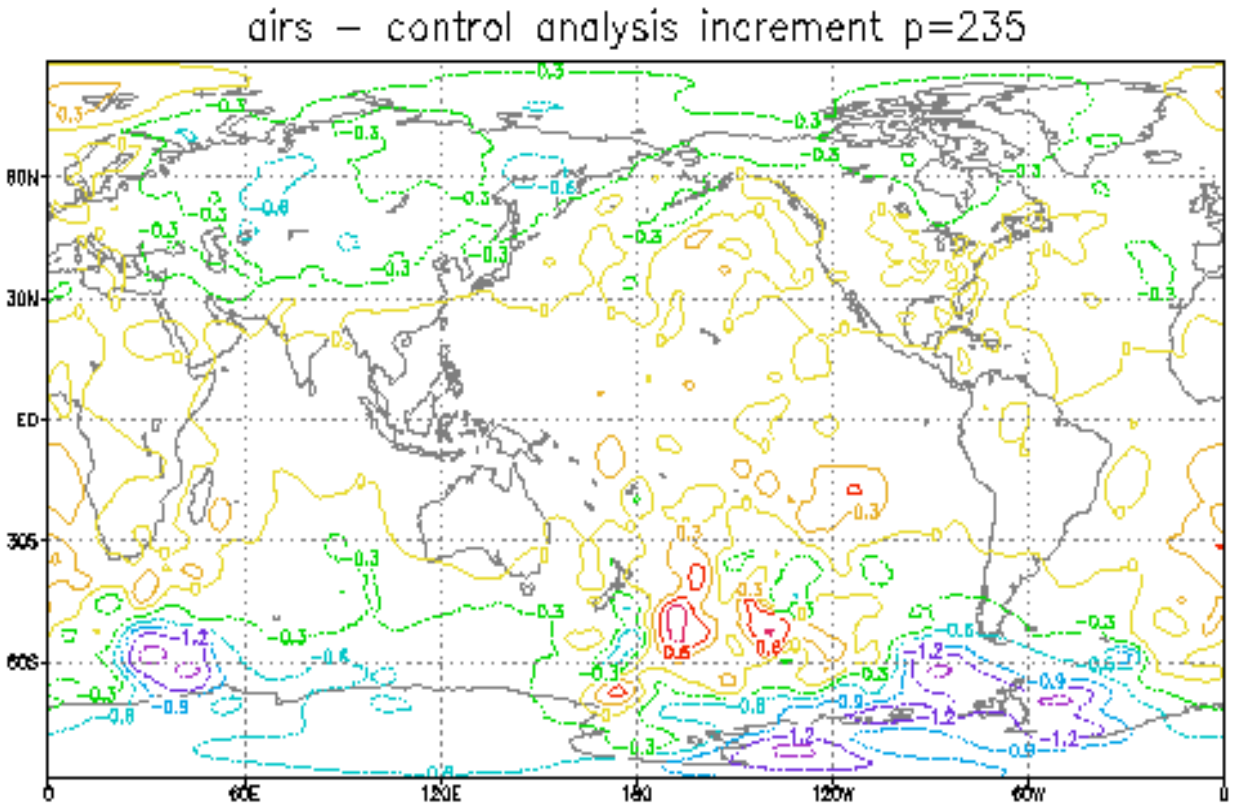
cnt,avg,sdv= 9892, -0.23871, 0.68772



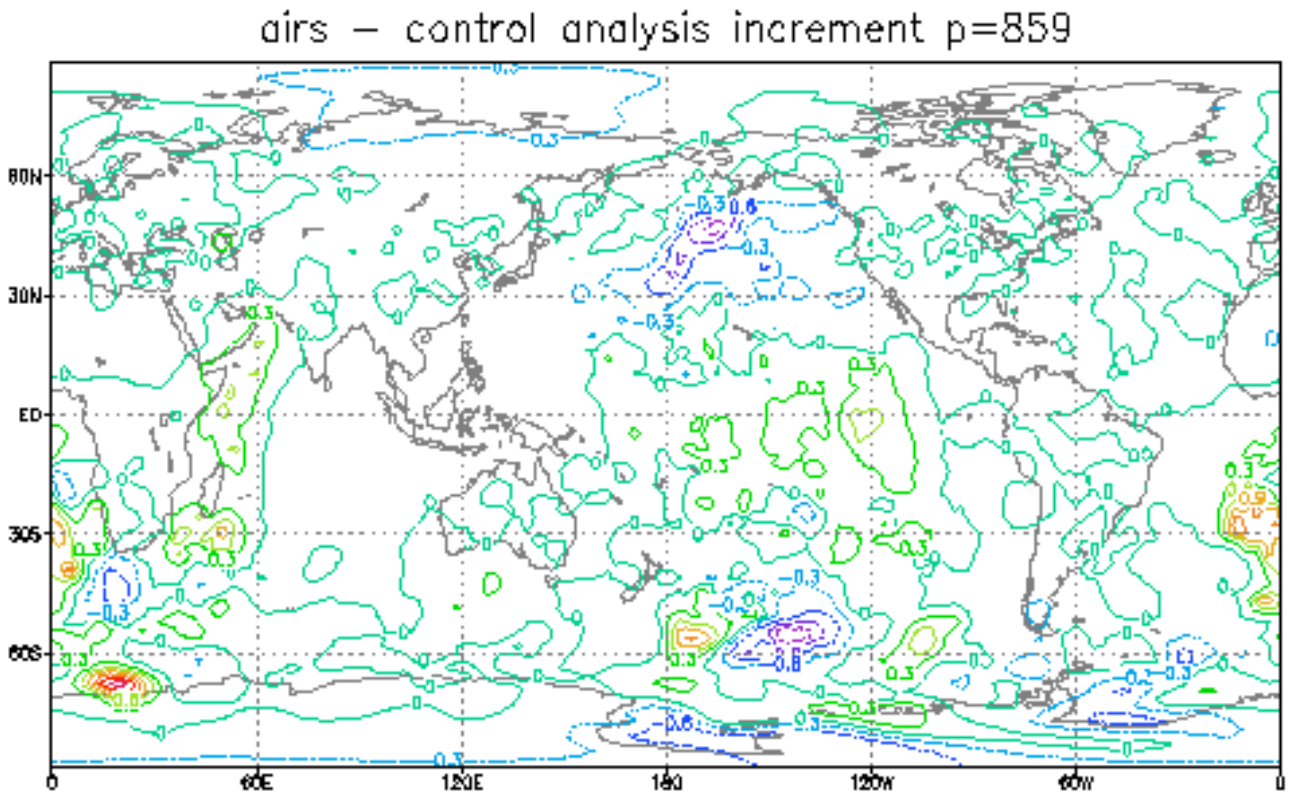
cnt,avg,sdv= 10475, -0.24172, 0.69572



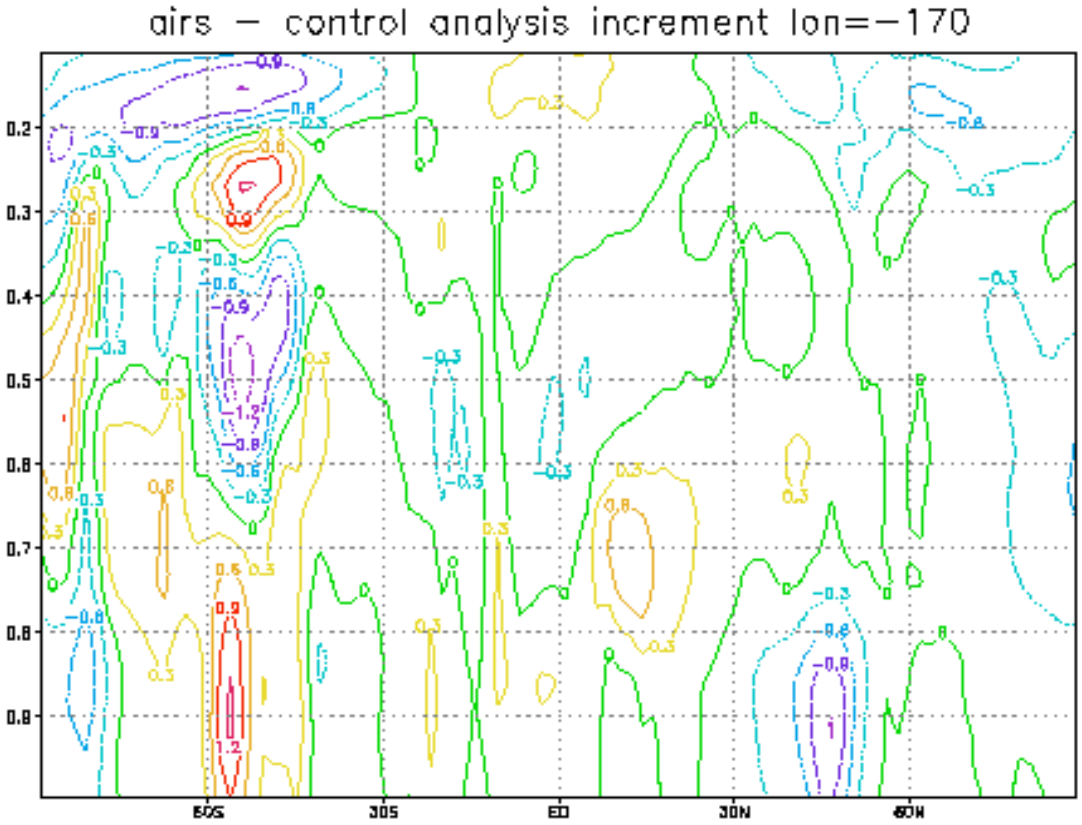
Initial analysis results (AIRS only)



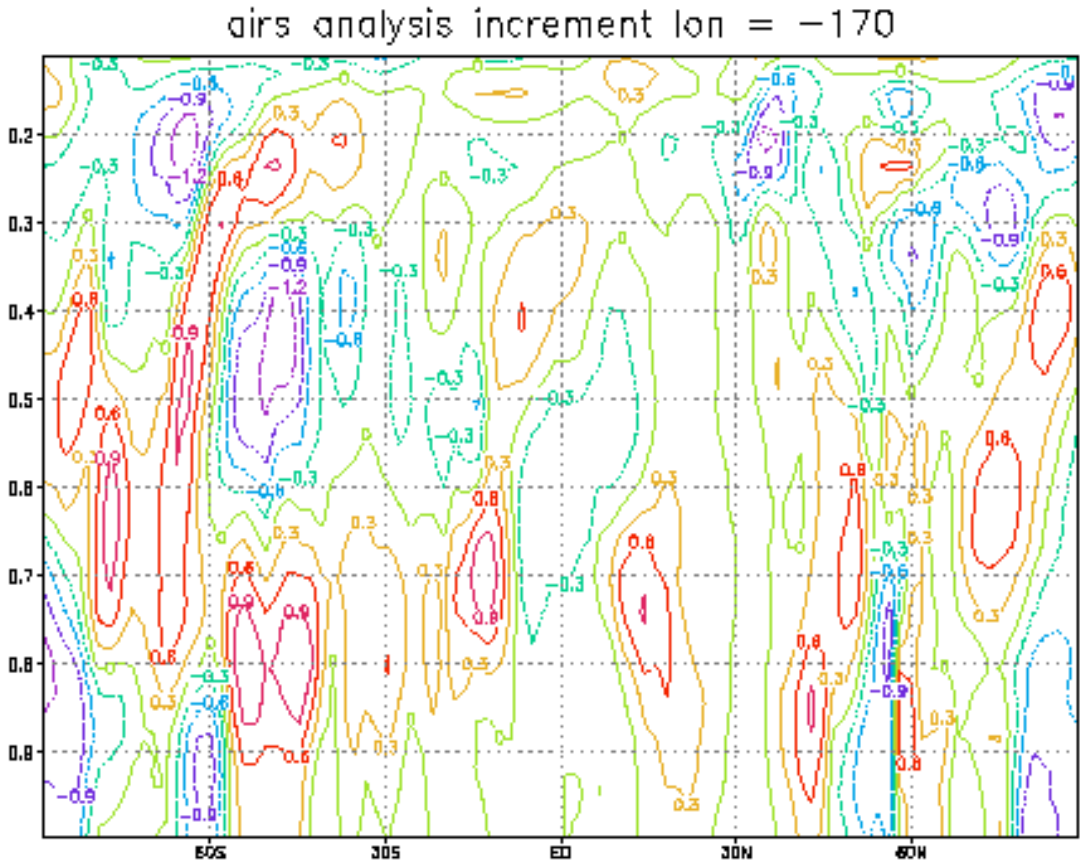
Initial analysis results (AIRS only)



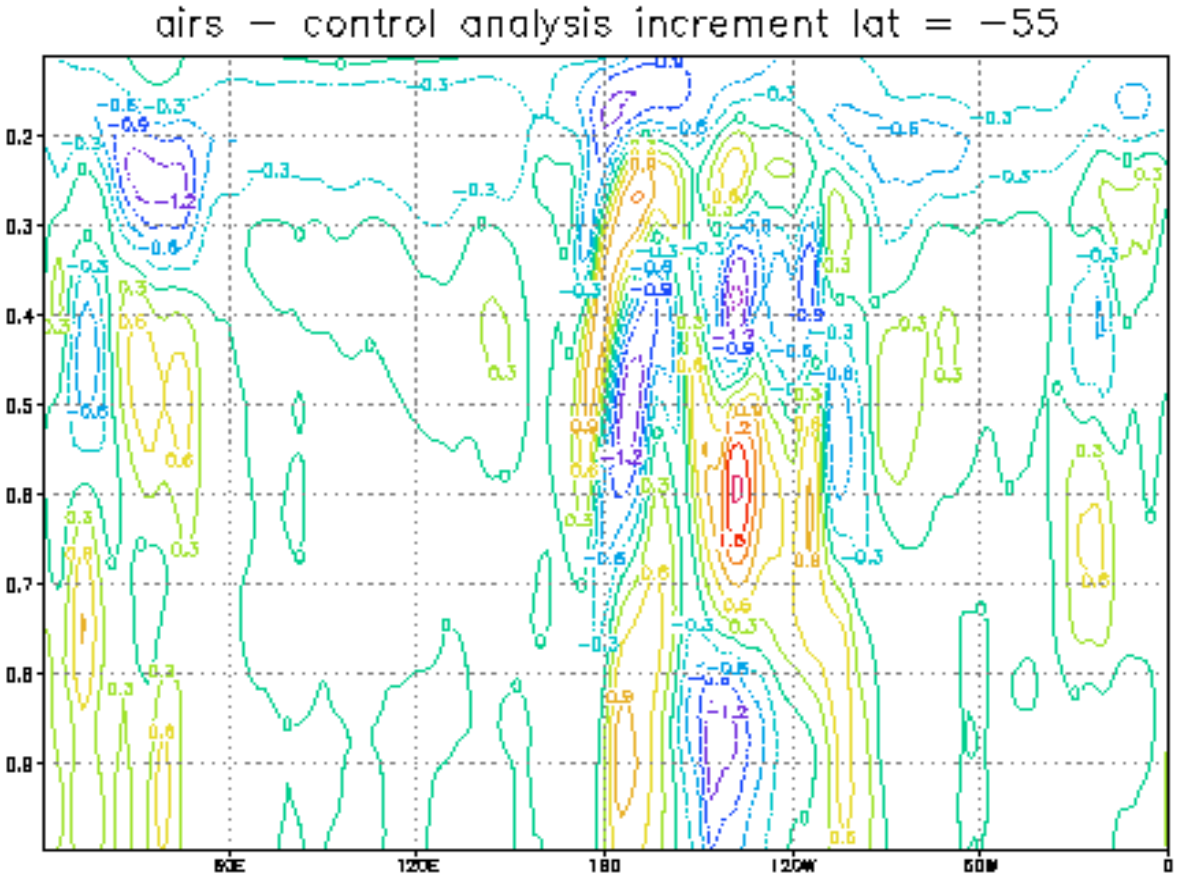
Initial analysis results (AIRS only)



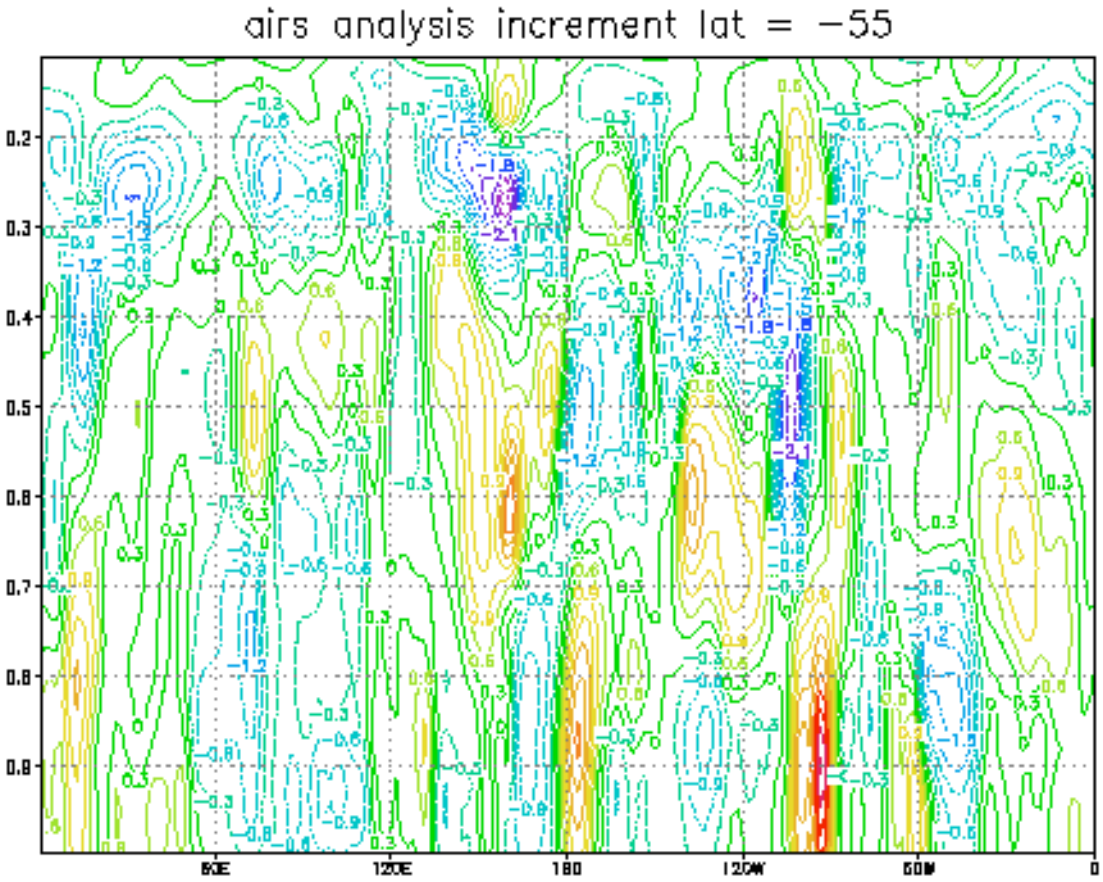
Initial analysis results (AIRS only)



Initial analysis results (AIRS only)

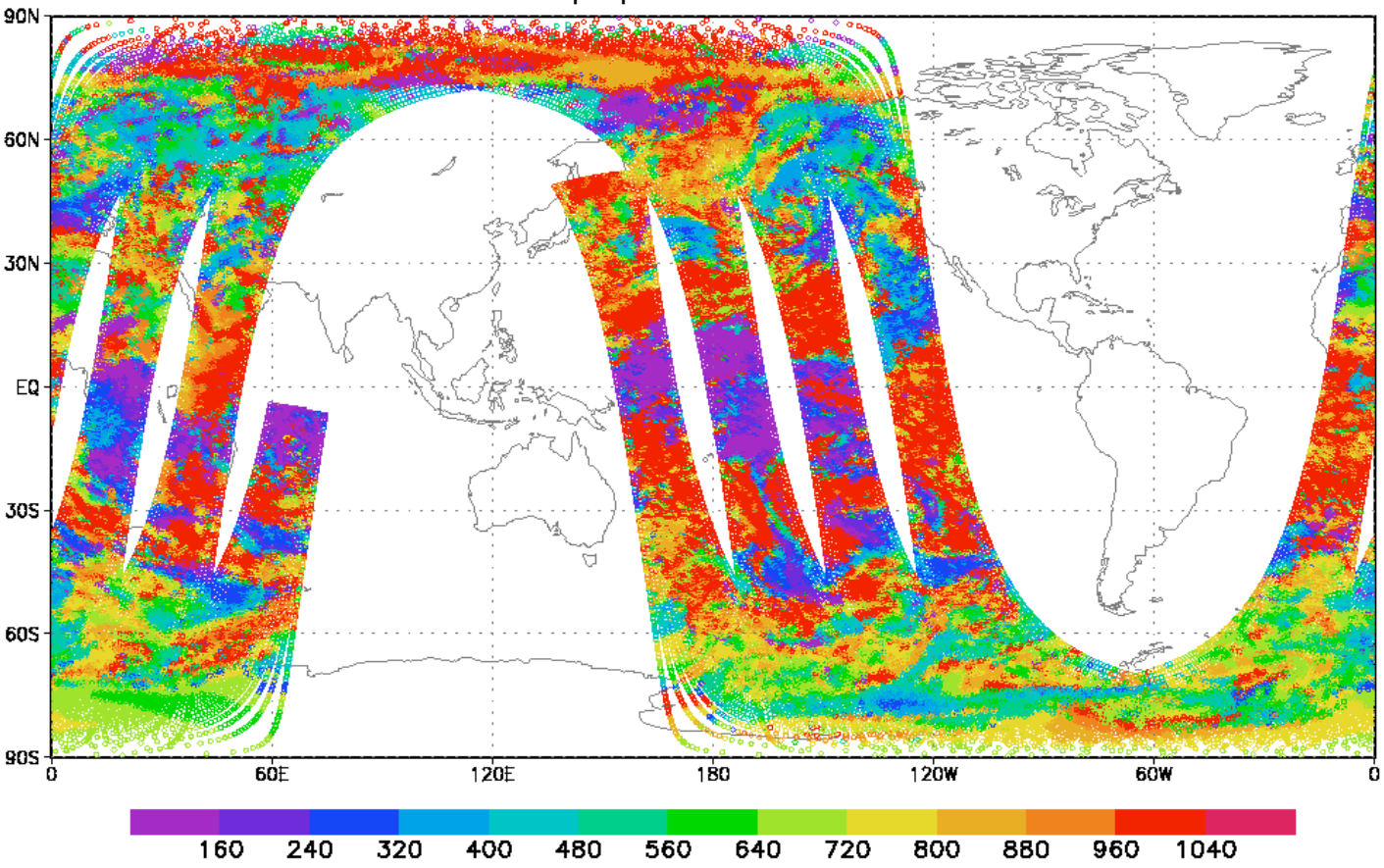


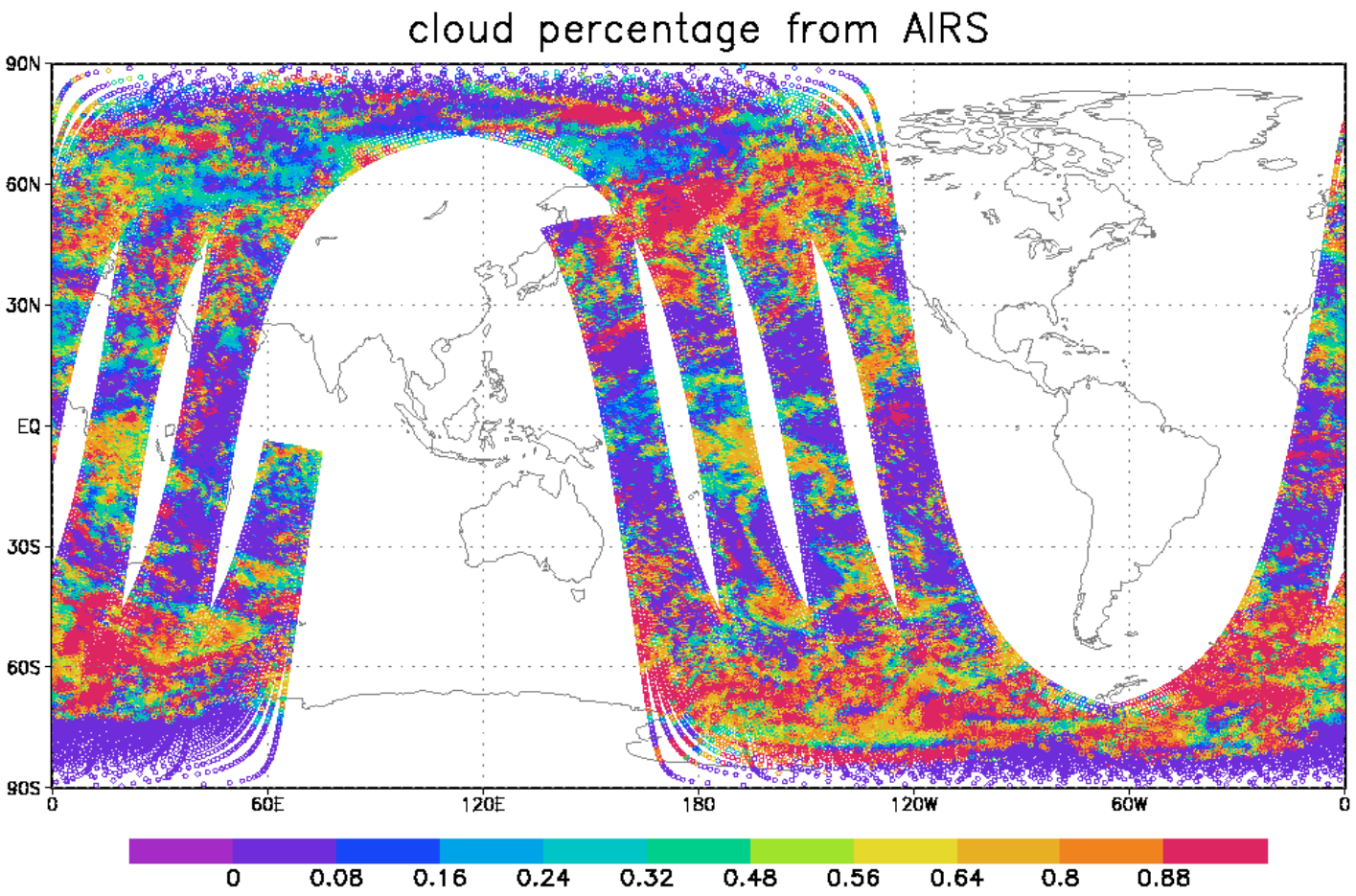
Initial analysis results (AIRS only)

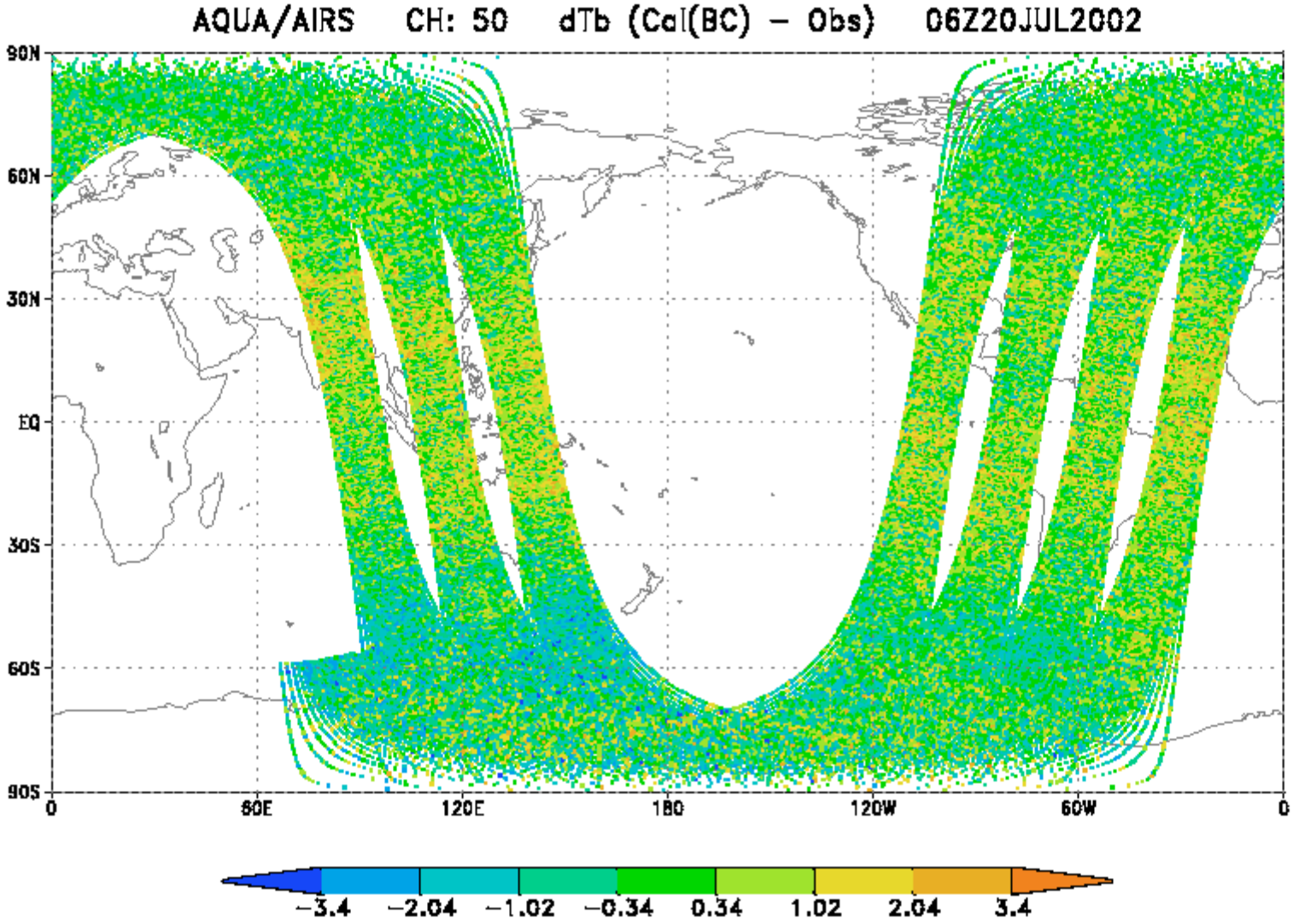


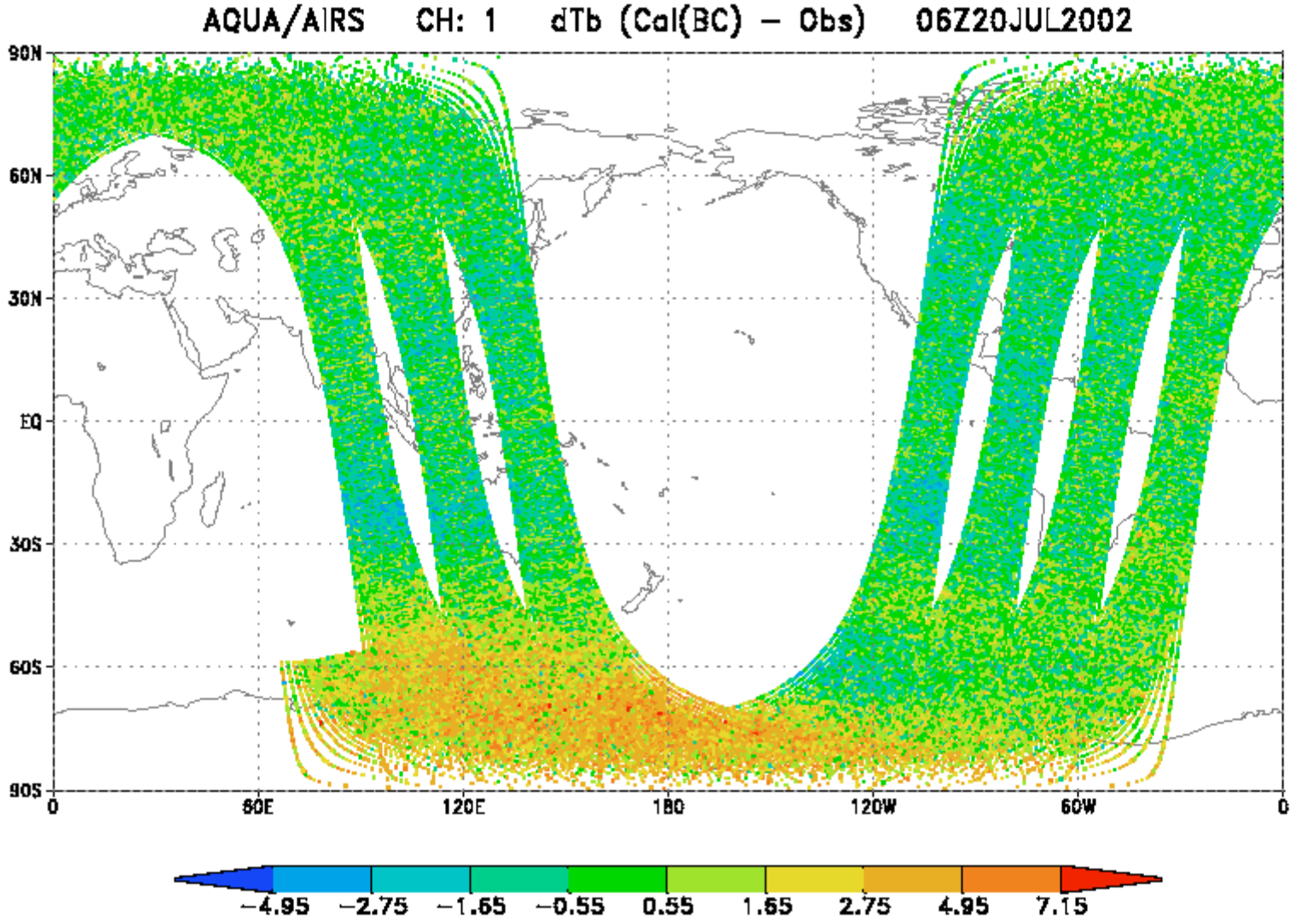
Future Steps

- Complete transfer of system to new machine (should be complete by end of April)
- Complete spin-up of bias correction
- Continue monitoring and single step analyses
  - Evaluate convergence of analysis system
  - Revaluate observational error statistics based on spun-up bias correction
  - Evaluate computational costs (new machine)
- Begin parallel testing and evaluation of AIRS/AMSU-A and HSB data
- Refine QC and bias correction and repeat


cloud top pressure from AIRS
90N
60N
30N
EQ
30S
60S
90S
0
60E
120E
180
120W
60W
0
160
240
320
400
480
560
640
720
800
880
960
1040


cloud percentage from AIRS
90N
60N
30N
EQ
30S
60S
90S
0
60E
120E
180
120W
60W
0
0
0.08
0.16
0.24
0.32
0.48
0.56
0.64
0.8
0.88


AQUA/AIRS CH: 50 dTb (Cal(BC) – Obs) 06Z20JUL2002
90N
60N
30N
EQ
30S
60S
90S
0
60E
120E
180
120W
60W
0
−3.4
−2.04
−1.02
−0.34
0.34
1.02
2.04
3.4


AQUA/AIRS CH: 1 dTb (Cal(BC) – Obs) 06Z20JUL2002
90N
60N
30N
EQ
30S
60S
90S
0
60E
120E
180
120W
60W
0
−4.95
−2.75
−1.65
−0.55
0.55
1.65
2.75
4.95
7.15